

Key

- 1. Create (draw) a scatterplot for the following data on student heights (explanatory) and weights (response). Describe the scatterplot.
- 2. Calculate the LSRL to predict a student's weight based on their height.
 $weight = -209 + 5.1(height)$
- 3. Interpret the slope of the line.
For every 1" increase in height, the weight increases by 5.1 lbs.
- 4. What is the correlation?
 $r = 0.849$
- 5. Is the linear model appropriate (using your plot and correlation)?
yes - resid. plot scattered
- 6. How good of predictor model do you think this is? (use your residual plot)
good - linear, high r & r^2
- 7. Predict the weight of a student that is 66 inches tall.
 $127.6 lbs.$
- 8. There are two students that are 66 inches tall.
 - a. What would be the residual for each?
 $106 - 127.6 = -21.6$ $135 - 127.6 = 7.4$
 - b. How do the two residuals differ?
one + and one -
 - c. What might be accounting for this difference? (look at the two students)
one male & one female
- 9. Break up the data into two groups based on sex.
- 10. Draw a scatterplot of both groups using different symbols or colors for the males and females. Does a pattern emerge?
- 11. Calculate the LSRL for predicting the weight for the males and the correlation.
 $weight_{males} = -364.4 + 7.3(height)$ $r = 0.755$
- 12. Calculate the LSRL for predicting the weight for the females and the correlation.
 $weight_{females} = -117 + 3.66(height)$ $r = 0.742$
- 13. Draw in both lines (from #10 and 12) into your scatterplot.
- 14. Predict the weight of a 66" male and a 66" female. How do these compare to what you found in #7?
male = $117.4 lbs$ female = $124.56 lbs$ very different!
- 15. What is the coefficient of determination for the males? Interpret this number.
57% of the change in male wt. is due to change in ~~height~~
- 16. What is the coefficient of determination for the females? Interpret this number.
55%

Student	Sex	Height	Weight
1	M	67	140
2	M	73	190
3	F	63	117
4	F	62	107
5	M	74	200
6	M	74	175
7	F	63	120
8	F	67	125
9	F	67	117
10	F	64	135
11	M	69	168
12	M	66	106
13	F	71	134
14	M	70	144
15	F	62	129
16	M	74	170
17	M	71	175
18	M	69	130
19	M	70	150
20	F	65	123
21	F	64.5	115
22	M	74	180
23	M	72	150
24	F	64	129
25	M	70	150
26	F	75	170
27	M	71	132
28	M	70	140
29	F	61	91
30	F	62	118
31	M	68	135
32	M	73	145
33	M	71	150
34	F	63	130
35	F	66	135
36	M	71	140
37	F	61	88
38	F	64	110
39	F	63	123
40	F	64	110
41	M	70	140
42	F	68.5	122
43	M	71	165
44	M	73	168
45	M	71	142
46	F	65.5	120
47	M	72	155
48	F	64	111
49	F	64	115

